

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend





### Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

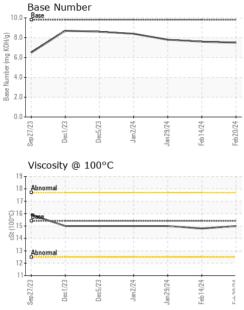
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0109310	GFL0109319	GFL0093571
Sample Date		Client Info		20 Feb 2024	14 Feb 2024	29 Jan 2024
Machine Age	hrs	Client Info		21042	21008	20888
Oil Age	hrs	Client Info		617	384	264
Oil Changed		Client Info		Not Changd	Not Changd	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	32	35	33
Chromium	ppm		>20	2	2	2
Nickel	ppm	ASTM D5185m	>4	0	0	<1
Titanium	ppm	ASTM D5185m	~ ~	<1	1	1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	10	10	11
Lead	ppm	ASTM D5185m		0	0	0
Copper	ppm	ASTM D5185m		5	6	6
Tin	ppm		>15	<1	0	<1
Vanadium	ppm	ASTM D5185m	210	0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
	le le			-	-	÷
			1:00:14/10:00:00		la ta ta mut	la ta ta mu O
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	1	2	0
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0	1 0	2 11	0
Boron Barium Molybdenum		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 53	2 11 59	0 0 58
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 53 <1	2 11 59 <1	0 0 58 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 53 <1 773	2 11 59 <1 801	0 0 58 <1 774
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	1 0 53 <1 773 1224	2 11 59 <1 801 1148	0 0 58 <1 774 1281
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	1 0 53 <1 773 1224 935	2 11 59 <1 801 1148 874	0 0 58 <1 774 1281 921
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	1 0 53 <1 773 1224 935 1055	2 11 59 <1 801 1148 874 1216	0 0 58 <1 774 1281 921 1201
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	1 0 53 <1 773 1224 935	2 11 59 <1 801 1148 874 1216 2862	0 0 58 <1 774 1281 921 1201 3075
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	1 0 53 <1 773 1224 935 1055 2707 current	2 11 59 <1 801 1148 874 1216 2862 kistory1	0 0 58 <1 774 1281 921 1201 3075 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	0 0 60 1010 1070 1150 1270 2060	1 0 53 <1 773 1224 935 1055 2707 current 7	2 11 59 <1 801 1148 874 1216 2862 history1 9	0 0 58 <1 774 1281 921 1201 3075 history2 11
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	1 0 53 <1 773 1224 935 1055 2707 current 7 1	2 11 59 <1 801 1148 874 1216 2862 history1 9 1	0 0 58 <1 774 1281 921 1201 3075 history2 11 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b>	0 0 60 1010 1070 1150 1270 2060 limit/base >25	1 0 53 <1 773 1224 935 1055 2707 current 7	2 11 59 <1 801 1148 874 1216 2862 history1 9	0 0 58 <1 774 1281 921 1201 3075 history2 11
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	1 0 53 <1 773 1224 935 1055 2707 current 7 1	2 11 59 <1 801 1148 874 1216 2862 history1 9 1	0 0 58 <1 774 1281 921 1201 3075 history2 11 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>limit/base</b> >20	1 0 53 <1 773 1224 935 1055 2707 <i>current</i> 7 1 <1 <1 <i>current</i> 0.8	2 11 59 <1 801 1148 874 1216 2862 history1 9 1 4 4 history1 0.8	0 0 58 <1 774 1281 921 1201 3075 history2 11 0 5 history2 0.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>limit/base</b> >20	1 0 53 <1 773 1224 935 1055 2707 current 7 1 <1 <1	2 11 59 <1 801 1148 874 1216 2862 history1 9 1 4 history1 0.8 8.5	0 0 58 <1 774 1281 921 1201 3075 history2 11 0 5 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <b>limit/base</b> >20	1 0 53 <1 773 1224 935 1055 2707 <i>current</i> 7 1 <1 <1 <i>current</i> 0.8	2 11 59 <1 801 1148 874 1216 2862 history1 9 1 4 4 history1 0.8	0 0 58 <1 774 1281 921 1201 3075 history2 11 0 5 history2 0.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	1 0 53 <1 773 1224 935 1055 2707 <i>current</i> 7 1 1 <1 <1 <i>current</i> 0.8 8.8	2 11 59 <1 801 1148 874 1216 2862 history1 9 1 4 history1 0.8 8.5	0 0 58 <1 774 1281 921 1201 3075 history2 11 0 5 history2 0.7 8.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	1 0 53 <1 773 1224 935 1055 2707 <i>current</i> 7 1 <1 <1 <1 <i>current</i> 0.8 8.8 20.4	2 11 59 <1 801 1148 874 1216 2862 history1 9 1 4 history1 0.8 8.5 20.3	0 0 58 <1 774 1281 921 1201 3075 history2 11 0 5 <u>history2</u> 0.7 8.5 19.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 20 <b>limit/base</b> >3 >20 >30	1 0 53 <1 773 1224 935 1055 2707 <i>current</i> 7 1 <1 <1 <i>current</i> 0.8 8.8 20.4 <i>current</i>	2 11 59 <1 801 1148 874 1216 2862 history1 9 1 4 history1 0.8 8.5 20.3 history1	0 0 58 <1 774 1281 921 1201 3075 history2 11 0 5 history2 0.7 8.5 19.8 history2



# **OIL ANALYSIS REPORT**

VISUAL



	Viscosity @ 100°C	Jan2/24	Jan29/24	10.0 8.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9		Jan2224	Febi 14/24 Febi 20/24
	<sup>19</sup>						
	Sep21/23 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Jan2/24	Jan 29/24	Feb20/24			
	8 6 4 2	/					
	0 C2//23 Set 1/23 Set 1	Jan 2/24	Jan 29/24 Feb 14/24	Feb20/24			
	E <sup>20</sup> 15- 10- 5-						
Feb14/24	Serrous Alloys	$\checkmark$		/			
	GRAPHS			10.4	10.0	14.0	10.0
				limit/base	current		history2 15.0
	Free Water	scalar	*Visual		NEG	NEG	NEG
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
eb 14/24 eb 20/24	Appearance	scalar	*Visual		NORML		NORML NORML
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
							NONE
							NONE NONE
	Feb14/24 Feb14/24   Feb14/24 Feb14/24	Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	Yellow Metal scalar Precipitate scalar Sitt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar Visc @ 100°C cSt GRAPHS Ferrous Alloys Jud Joint Scalar Free Water scalar Non-ferrous Metals	Yellow Metal scalar *Visual Precipitate scalar *Visual Debris scalar *Visual Sand/Dirt scalar *Visual Appearance scalar *Visual Odor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual For comparison Scalar *Visual Free Water scalar *Visual Free Water scalar *Visual For comparison Scalar *Visual For comparison For com	Yellow Metal Scalar "Visual NONE Precipitate Silt Scalar "Visual NONE Silt Scalar "Visual NONE Sand/Dirt Scalar "Visual NONE Sand/Dirt Scalar "Visual NORML Odor Scalar "Visual NORML Odor Scalar "Visual NORML Odor Scalar "Visual NORML Odor Scalar "Visual NORML Odor Scalar "Visual NORML Odor Scalar "Visual NORML MORML Odor Scalar "Visual NORML MORML MORML MORML MORML Odor Scalar "Visual NORML MOR	Yellow Metal scalar *Visual NONE NONE Precipitate scalar *Visual NONE NONE Silt scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual NORML NORML Visc @ 100°C cSt ASTM D445 15.4 15.0 CRAPHS Ferrous Alloys Of craphone for the scalar *Visual NORMS 15.4 15.0 CRAPHS Ferrous Alloys Of comparison of the scalar *Visual NORMS 15.4 15.0 CRAPHS Ferrous Alloys Of comparison of the scalar *Visual NORMS 15.4 15.0 CRAPHS	Yellow Metal scalar *Visual NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE Sitt scalar *Visual NONE NONE NONE Sana/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Odor scalar *Visual NORML N

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